

ABSTRACT

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An improved laser system and method of operation provides signal continuity and safety in the event of accidental interruption of the laser beam. At the transmitting end, a main laser generates a beam, which is surrounded by a low powered guard beam generated by a pulsed laser. At the receiver, a lens system includes a main lens for receiving the main laser beam and a surrounding annular segmented set of lenses acting as a set of parallel receivers for the surrounding guard beam. A trigger circuit is connected to the parallel receivers. In operation, the guard beam insulates the main laser beam and detects interruptions. When the guard beam is interrupted at any point along the length of the beam, one or more of the parallel receivers will be blocked, and a signal will be generated by the trigger circuit to activate a return laser to alter the performance of the main laser, including shutdown of the beam. Upon shutdown, the current stream of bits or packets to the main laser is buffered. Once the guard band interruption is cleared, the trigger signal ends to terminate the return laser. With the termination of the return laser, the buffer circuit is discharged to the main laser, which returns to the normal state whereby signal continuity and safety of operation are achieved.